

Remarks

At the time of the Office Action dated June 4, 2008, claims 1-5, 7, 9-16, 18-26, 28, 30-32 and 34 were pending in the application and claims 1-5, 7, 9-16, 18-26, 28, 30-32 and 34 were rejected. By this paper, Applicants amend claims 1, 14 and 22 and add claims 44 and 45. These amendments were not made as a result of any cited art. No new matter has been introduced by virtue of the present amendments. Applicants respectfully request reconsideration of the above application in view of the present amendments and following remarks.

Claim 22 stands rejected under the written description requirement of 35 U.S.C. § 112, ¶ 1 because the claim recites that "the reaction product R" is directly oxidized while the disclosure provides for the reaction product hydrogen to be oxidized. Without waiver or prejudice, Applicants have amended claim 22 to recite the reaction product including R," which is fully described by the disclosure as filed. Applicants, therefore, request the Examiner to withdraw this rejection of claim 22.

Claim 22 stands rejected under 35 U.S.C. § 112, ¶ 2 because the limitation "reaction product R" does not have sufficient antecedent basis according to the Examiner. Without waiver or prejudice, Applicants have amended claim 22 to recite "the reaction product including R." Amended claim 22 provides proper antecedent basis for the limitation in question. Applicants, therefore, request the Examiner to withdraw this rejection of claim 22.

Claims 1-5, 7, 9-16, 18-21 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kearl* (U.S. Pat. No. 6,677,070) in view of *Anzai et al.* (U.S. Pat. Pub. No. 2003/0060364) and *Nakagaki et al.* (U.S. Pat. No. 6,099,983). Applicants respectfully traverse this rejection because the proposed combination, if possible, does not teach or suggest the pending claims.

For example, pending method claim 1 recites "reacting molecular oxygen and a compound having formula 1 via a thermal reaction composition: CH₃-O-R ... at a sufficient

temperature of less than about 650°C to form a thermal composition reaction product mixture ... comprising a reaction product including R." Method claim 1 further recites the step of "contacting the anode of a solid oxide fuel cell with the reaction product mixture to directly oxidize the thermal composition reaction product including R."

The proposed combination of *Kearl*, *Anzai et al.* and *Nakagaki et al.* does not teach or suggest these limitations of pending claim 1. At best, *Kearl* discloses an "anode/fuel electrode 18 at which internal reforming (and consequent production of hydrogen) and/or direct oxidation of fuel takes place." (Col. 4, ll. 65-67.) *Kearl* fails to teach the reaction of molecular oxygen and the compound having formula 1 via thermal composition, and the reaction product mixture of carbon monoxide, molecular hydrogen and a reaction product including R. The Examiner agrees by stating that "*Kearl* ... fail[s] to teach the use of the specific mixtures of the instant claims." (Office Action, June 4, 2008, p. 4.)

Anzai et al. fails to address the defective teachings of *Kearl*. *Anzai et al.*'s teachings are limited to the following autothermal reforming process: "[i]n the case of using a gas as the feed stock in the autothermal reforming reaction, the gas preheated to a predetermined temperature is well-mixed with steam and air or oxygen and then introduced into a reactor filled with the catalyst." ¶ [0048]. The reforming process requires the reaction of the hydrocarbon feed stock, air or oxygen, and steam. The reformed gas product of this reaction of the three reactants is "composed principally of hydrogen." ¶ [0002].

Pending claim 1 recites a thermal composition reaction – not a reforming reaction. Claim 1 recites reacting "molecular oxygen and the compound having formula 1," whereas *Anzai et al.*'s teachings are limited to reacting a hydrocarbon feed stock, air or oxygen, and steam, i.e., a reforming reaction. The Examiner agrees that *Anzai et al.* (and *Kearl*) fail to teach a thermal composition reaction. (Office Action, p. 9.) Further, *Nakagaki et al.* does not cure the defective teachings of *Kearl* and *Anzai et al.*, and the Examiner does not contend otherwise. Therefore, the reactants of *Anzai et al.* and those of the instant claim are not the same. For at least this reason, *Anzai et al.* does not teach or suggest pending claim 1.

Further, since the reactants of *Anzai et al.* and those of the instant invention as claimed are not the same, the reaction product mixtures are inherently different. Claim 1 recites "a thermal composition reaction product mixture of carbon monoxide, molecular hydrogen and a reaction product including R." *Anzai et al.* teaches "a reformed gas [product] which is composed principally of hydrogen." *Anzai et al.* does not provide a reaction product including R. Therefore, *Anzai et al.* does not meet the reaction product mixture of pending claim 1.

Moreover, since *Anzai et al.* does not teach the claimed reaction product mixture, it also does not provide the claimed step of "contacting the anode of a solid oxide fuel cell with the thermal composition reaction product mixture to directly oxidize the reaction product including R."

Further, *Nakagaki et al.* does not cure the defective teachings of *Kearl* and *Anzai et al.*, and the Examiner does not contend otherwise.

In light of the foregoing, the cited references, taken individually or in combination, do not teach or suggest the claimed invention as recited in claim 1 (or depending claims 2-5, 7, 9-13 and 44). Therefore, Applicants respectfully request the Examiner to withdraw this rejection.

Pending claim 14 recites "reacting air and dimethyl ether via a thermal composition reaction...at a sufficient temperature of less than about 650°C to form a reaction product mixture...comprising methane." Method claim 14 further recites the step of "contacting the anode of a solid oxide fuel cell with the reaction product mixture to directly oxidize the methane." For at least the reasons set forth above with respect to claim 1, the cited references, taken individually or in combination, do not teach or suggest these limitations recited in claim 14 (or depending claims 15, 16, 18-21 and 45).

Claims 22-26, 28, 30-32 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kearl* in view of *Anzai et al.*, *Nakagaki et al.* and *Khandkar et al.* (U.S. Pat. No. 5,763,114). Applicants traverse this rejection because the proposed combination, if possible, does not teach or suggest the pending claim.

Pending claim 22 recites a fuel cell system including "a heat source surrounding the anode and the cathode ... the conduit and a portion of the inlet." As claimed, "the heat source heat[s] the first mixture [of molecular oxygen and a compound having formula 1] ... to form a thermal composition reaction product mixture via thermal composition...comprising ... a reaction product including R." The claim further recites that "the conduit contacts the anode ... with the thermal composition reaction product mixture to directly oxidize the reaction product including R."

For at least the reasons set forth above, the *Kearl*, *Anzai et al.* and *Nakagaki et al.* references, taken individually or in combination, do not teach or suggest these limitations recited in claim 22 (or depending claims 23-26, 28, 30-32 and 34). Furthermore, *Khandkar et al.* does not cure the defective teachings of *Kearl*, *Anzai et al.* and *Nakagaki et al.*, and the Examiner does not contend otherwise.

For at least these reasons, claim 22 (and depending claims 23-26, 28, 30-32 and 34) are patentable over the proposed combination of *Kearl*, *Anzai et al.*, *Nakagaki et al.* and *Khandkar*.

Applicants do not acquiesce in the Examiner's characterizations of the art. For brevity and to advance prosecution, Applicants may not have addressed all characterizations of the art and reserve the right to do so in further prosecution of this or a subsequent application. The absence of an explicit response by Applicants to any of the Examiner's positions does not constitute a concession to the Examiner's positions. The fact that Applicants' comments have focused on particular arguments does not constitute a concession that there are not other arguments for patentability of the claims. Applicants submit that all of the dependent claims are patentable for at least the reasons given with respect to the claims on which they depend.


CONCLUSION

For the foregoing reasons, Applicant believes that the Office Action of June 4, 2008 has been fully responded to. The present amendments were not presented earlier because Applicants believed that the previous claims addressed all issues of patentability. Since the claim amendments do not raise any new issues, Applicants believe that it is appropriate to enter the amendment after final. Consequently, in view of the above amendments and remarks upon entry of the present amendments, Applicants respectfully submit that the application is in condition for allowance, which allowance is respectfully requested.

The Commissioner is hereby authorized to charge any fee deficiency associated with the filing of this Paper to the Deposit Account of Applicants' assignee, Ford Global Technologies LLC, Deposit Account No. 06-1510.

Respectfully submitted,

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